08/157,375

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   id AA02297; Mon, 29 Aug 94 13:24:58 EDT
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   id QQxfbp22296; Mon, 29 Aug 1994 13:24:42 -0400
Received: from spo.UUCP by uucp3.UU.NET with UUCP/RMAIL
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Received: from spo4.eds.com by spo.spo.eds.com (4.1/SPO-2.4)
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Received: by spo4.eds.com (4.1/SPOSUB-1.4)
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Subject: Re: c2603.sch
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Message-Id: <19940829_103915_spo_15149>
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             CUSTOMER REQUEST SUMMARY

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> 2 ACCESS           3 ACCORDING        2 ACCORDINGLY      1 ACHIEVE
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> 1 ACHIEVED         1 ADDITION         1 ADDS             1 ADEQUATE
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> 2 ADJACENT         2 ADJUSTED         1 ADOPTED          1 ADOPTIVELY
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> 3 ALL              1 ALLOCATION       1 ALLOW            2 ALSO
>
> 1 ALTAIR           4 AMPLITUDE       36 AND              1 ANOTHER
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1 CAUSED	2 CELL	2 CHANNEL	1 CHANNELS
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2 CONSUME	1 CONSUMPTION	1 CONTAINED	1 CONVERSION
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1 COURIER	14 DATA	1 DAY	5 DELAY
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1 DESIRE	1 DESTINATION	1 DETAILED	4 DEVICE
4 DEVICES	3 DIAGRAM	5 DIFFERENCES	1 DIFFERENT
2 DIRECTIONAL	3 DISCLOSED	1 DISCLOSES	1 DIVIDED
1 DRAWINGS	14 EACH	1 EFFECTIVE	1 EITHER
1 ELECTRICAL	4 ELECTRONIC	1 EMBODIMENTS	4 ENABLE
1 ENCODING	1 ENCOUNTERS	1 ENGINEERING	2 ENHANCED

1 ENSEMBLE	11 ENVIRONMENT	2 ENVIRONMENTS	1 EQUALIZE
1 EQUIVALENT	3 ERROR	1 ESSENTIALLY	1 EVEN
2 EXAMPLE	4 EXCESS	1 EXPENSE	1 EXPLAINED
1 EXTENDS	1 EXTENSIVELY	1 FAMILY	1 FIBRE
6 FIG	2 FOLLOWING	12 FOR	2 FORWARD
4 FREQUENCIES	6 FREQUENCY	2 FUNCTION	1 FURTHER
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1 INCONVENIENT	1 INCREASING	2 INCREASINGLY	1 INDIVIDUAL
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1 LOSES	1 LOW	1 MAGAZINE	1 MAGNITUDE
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2 MAY	3 MBIT	1 MBITSLS	4 MEANS
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1 MULTILEVEL	16 MULTIPATH	1 MULTIPLE	1 MUST
1 NAME	2 NAMELY	1 NECESSARY	1 NEED
1 NEEDED	4 NETWORK	2 NETWORKS	2 NON

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4 PHASE	1 PLAN	1 PLUG	1 PLUGGED
5 PLURALITY	1 POINTS	2 PORTABILITY	10 PORTABLE
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2 RECENT	1 RECEPTION	6 RECIPROCAL	1 REDUCED
4 REDUNDANCY	1 REFERENCE	1 REFLECTIONS	1 RELATES
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1 RESTRICTED	1 RESULTING	1 REVIEW	14 SAID
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3 SHIFT	5 SHORT	1 SIGNAL	2 SIGNALS
5 SIGNIFICANT	2 SIMILARLY	1 SINCE	2 SINGLE
1 SIZE	2 SMALL	1 SOLD	1 SOLUTION
1 SOUNDING	1 SOURCE	1 SPECTRUM	1 SPEND
2 SPREAD	1 STATE	1 STEADY	2 STILL

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> 1 STRUCTURING       1 STYLE             2 SUB               2 SUBSTANTIAL
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> 1 SUBSTANTIALLY     8 SUCH              3 SUFFICIENT        1 SWITCH
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> 5 SYSTEM            1 SYSTEMS           1 TAKE              5 TECHNIQUES
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> 1 TECHNOLOGY        1 TERMINAL          4 THAT             96 THE
>
> 3 THEIR             3 THERE             1 THEREBY           2 THEREFORE
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> 2 THESE             1 THEY             11 THIS              1 THROUGH
>
> 8 TIME              1 TIMES             1 TOGETHER          1 TOO
>
> 1 TOOL              1 TRADE             7 TRANSCEIVER      12 TRANSCEIVERS
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>35 TRANSMISSION      6 TRANSMISSIONS     4 TRANSMIT          2 TRANSMITTED
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> 2 TRANSMITTING      1 TREND             1 TUTORIAL          1 TWO
>
> 1 ULTIPATH          1 UNDER             1 UNIQUE            6 USE
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> 1 USED              1 USEFUL            1 USER              1 UTILIZING
>
> 1 VIEW              2 WHERE             3 WHEREIN          16 WHICH
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> 1 WHILE             1 WHILST            1 WIDESPREAD        2 WILL
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Sales Transaction Nbr:	597
Date Posted:	19940829
Product:	E003

E003 WORD FREQUENCY SEARCH LIST REPORT

Top 3 Classes:

Class:	375/1	Frequency:	19
Class:	370/95.3	Frequency:	3
Class:	370/104.1	Frequency:	2

Top closest patents:

Ref	Dist	Patent Id	Issue Date	Class	Title
1	0.36	05276703	19940104	375/1	Wireless local area network

communications system

Inventor: Budin; Dan
Assignee: Windata, Inc.
Abstract:

A local area network including at least one hub unit, at least one associated station unit and a wireless communication link between each hub unit and its associated station units. The communication link includes a wireless down-link channel for transferring information from each hub unit to its associated station units and a wireless up-link channel for transferring information from each station unit to its associated hub unit. Communication is conducted in accordance with a combination time division multiplexing and contention based protocol. A synchronized common slotted time frame between each hub unit and its associated station units is imposed by the hub unit.

2 0.35 05280472 19940118 370/18 CDMA microcellular telephone system and distributed antenna system therefor

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract:

A code division multiple access (CDMA) communication system in which cellular techniques are utilized in a wireless Private Branch Exchange (PBX) environment. A microcellular arrangement is defined in which a base station communicates user information signals using CDMA communication signals with subscriber terminals. A distributed antenna system is utilized in the system to provide multipath signals which facilitate signal diversity for enhanced system performance.

3 0.35 05287384 19940215 375/1 Frequency hopping spread spectrum data communications system

Inventor: Avery; John W.
Assignee: LXE Inc.
Abstract:

A frequency hopping spread spectrum wireless data communications network is disclosed. Time mark frames are transmitted by each base station at a regular cadence and each time mark frame contains all information necessary to determine the hopping sequence of channels, a sub-set of possible channels in use, and the particular channel upon which the time mark was transmitted. Receipt of the time mark resynchronizes a slot clock that is used by the wireless terminals in implementing a media access protocol with defined synchronous time slots. The base station to roaming terminal radio link is half duplex. Each base station broadcasts an end-of-message frame during a hop period that indicates that it has no more data to send during that hop. If there are no inbound messages a roaming terminal needs to send, it puts its receiver in a low power mode until the next hop time approaches. Look ahead acquisition of the hopping sequence for a nearby base station when the received signal level for the current base station drops is also disclosed.

4 0.35 04852090 19890725 370/95.3 TDMA communications system with adaptive equalization

Inventor: Borth; David E.
Assignee: Motorola, Inc.
Abstract:

A method and means for reducing multipath interference distortion in a time-division multiple access (TDMA) communications system is disclosed. A transmitting station (100) formats one or more equalizer synchronization words with a first user's data word, time-multiplexes this formatted user message with at least one other user message, and transmits the combined signal. The receiving station (200) receives the transmitted TDMA signal, de-multiplexes the first user message from the other user messages, and equalizes the time delay spread characteristics of the data word portion of the first user message (or a stored version of such) in response to this de-multiplexing. Performing the adaptive equalization process more than once per user time slot provides an even higher data throughout for the system. Storing the first user message in a data buffer permits the adaptive equalization process to be performed in non-real time, thereby lowering the required signal processing data rate in any particular receiver.

5 0.35 05282222 19940125 375/1 Method and apparatus for multiple access between transceivers in wireless communications using OFDM spread spectrum

Inventor: Fattouche; Michel

Abstract:

A method for allowing a number of wireless transceivers to exchange information (data, voice or video) with each other. A first frame of information is multiplexed over a number of wideband frequency bands at a first transceiver, and the information transmitted to a second transceiver. The information is received and processed at the second transceiver. The information is differentially encoded using phase shift keying. In addition, after a pre-selected time interval, the first transceiver may transmit again. During the preselected time interval, the second transceiver may exchange information with another transceiver in a time duplex fashion. The processing of the signal at the second transceiver may include estimating the phase differential of the transmitted signal and pre-distorting the transmitted signal. A transceiver includes an encoder for encoding information, a wideband frequency division multiplexer for multiplexing the information onto wideband frequency voice channels, and a local oscillator for upconverting the multiplexed information. The apparatus may include a processor for applying a Fourier transform to the multiplexed information to bring the information into the time domain for transmission.

6 0.35 05172396 19921215 375/107 Public service trunking simulcast system

Inventor: Rose, Jr.; George D.

Assignee: General Electric Company

Abstract:

In a multiple site radio frequency simulcasting RF transmission system, data transmitted from a control point to the RF transmitter sites exhibits random time delay skew because multi-phase modems recover clock signals from an arbitrary one of the multiple phases. The outputs of the modems are temporarily stored at the sites by memory buffers. The control point derives resynchronization signals from a source data clock, this signal containing frequency and timing information. The resynchronization signal is distributed to the various sites via additional phase-stable, delay compensated channels. Each site is provided with a clock recovery

circuit that recovers the original source data clocking signal from the resynchronization signal and also extracts read-out timing information from the resynchronization signal. The recovered data clocking signal and the readout timing information are used to synchronize the readout from the FIFO memory buffers-providing approximately simultaneous (coherent) readout of the same data bits from the respective buffers of the different simulcasting transmitter sites.

7 0.34 05222101 19930622 375/13 Phase equalizer for TDMA portable radio systems

Inventor: Ariyavisitakul; Sirikiat
Assignee: Bell Communications Research
Abstract:

A receiver for use in the port or portable units in a TDM/TDMA digital radio communications system is disclosed which incorporates an equalizer (107) to compensate for channel distortion due to multipath delay spread. Each received burst of information is oversampled at a multiple of the symbol rate and stored in a buffer memory (105). A joint estimator (106) processes the stored burst by operating on a known training sequence of bits within the burst to determine burst timing (where the burst actually begins) and the symbol timing (the optimum sample sample per oversampled symbol to be used for detection purposes). The estimator also determines whether the stored burst should be processed in a time-forward or time-reversed order. The joint estimator includes plural training equalizers (201), each of which is associated with an assumed burst location and each of which attempts to converge on the known training sequence as the stored sequence is circulated plural times through the equalizers in both the time-forward and time-reversed order. Burst and symbol timing and the optimum processing order are determined from the location of the training equalizer which converges with the minimum mean-square error. The determined burst and symbol timing, and the selected processing order, are passed to the buffer storage for read-out, in that selected order, of the stored burst information in that order to the input of the main receiver equalizer (107). That main equalizer is initially set with the equalizer parameters determined by the training equalizer yielding the minimum mean-square error. The equalizers can either be conventional fractionally-spaced decision feedback equalizers or can be phase equalizers, which operate on the received phase angle.

8 0.34 05155742 19921013 375/13 Time dispersion equalizer receiver for TDMA portable radio systems with a time-reversal structure

Inventor: Ariyavisitakul; Sirikiat
Assignee: Bell Communications Research, Inc.
Abstract:

A receiver for use in the port or portable units in a TDM/TDMA digital radio communications system is disclosed which incorporates an equalizer (107) to compensate for channel distortion due to multipath delay spread. Each received burst of information is oversampled at a multiple of the symbol rate and stored in a buffer memory (105). A joint estimator (106) processes the stored burst by operating on a known training sequence of bits within the burst to determine burst timing (where the burst actually begins) and the symbol timing (the optimum sample per oversampled symbol to be used for detection purposes). The estimator also determines whether the stored burst should be processed in a time-forward or time-reversed

order. The joint estimator includes plural training equalizers (201), each of which is associated with an assumed burst location and each of which attempts to converge on the known training sequence as the stored sequence is circulated plural times through the equalizers in both the time-forward and the time-reversed order. Burst and symbol timing and the optimum processing order are determined from the location of the training equalizer which converges with the minimum mean-square error. The determined burst and symbol timing, and the selected processing order, are passed to the buffer storage for read-out, in that selected direction, of the stored burst information to the input of the main receiver equalizer (107). The main and training equalizers can be either conventional fractionally-spaced decision feedback equalizers or phase equalizers, which operate on the received phase angle.

9 0.34 04715045 19871222 375/58 System protocol for composite shift keying communication system

Inventor: Lewis; Kenneth A.
Assignee: GridComm, Inc.
Abstract:

A system protocol for the composite shift key communication of binary signals in which a transmitting transceiver transmits a first summed signal having a first qualifying signal at a qualifying signal frequency Wqt as one of the summed signal components only when a binary signal is desired to be transmitted. The transmitting transceiver ceases transmission of the first qualifying signal Wqt as a transmitted signal or as a component of a composite summed signal when neither a binary zero nor a binary one is desired to be transmitted. The receiving transceiver signals to the transmitting transceiver when the binary signal transmission is being successfully received by transmitting thereto a second qualifying signal Wqr. The receiving transceiver drops the transmission of the second qualifying signal Wqr when the binary signal transmission is not being successfully received, or is being received with perceived errors therein. The transmitting transceiver expects to receive the second qualifying signal Wqr during a successful binary signal transmission, and maintains its transmission of binary signals only when Wqr is received, indicating a successful binary signal transmission, and drops and restarts its transmission of binary signals in response to the transmission of Wqr being dropped by the receiving transceiver, indicating an unsuccessful binary signal transmission. Details are also disclosed of many additional aspects of a protocol communication system including transmission in data packets, timing of the length of data packets as indicated by a subfield therein, a complementary binary test, a CHECKSUM subfield, a SEQUENCE subfield, a CHANNEL subfield, a TARGET subfield, a SENDER subfield, a LINK/CALL subfield, a SWAP subfield, an ORIGINAL TRANSMITTER subfield, an adaptive data packet length function, and a function which utilizes error information stored in memory in the selection of an available best communication channel.

10 0.34 05168510 19921201 375/40 Spread spectrum-time diversity communications systems and transceivers for multidrop area networks

Inventor: Hill; Lawrence W.
Assignee: ComSource Systems
Abstract:

Messages are transmitted on pairs of frequencies that are orthogonal,

that is the frequencies have no least common denominator (are prime to each other). A message is transmitted on the first of the pair of frequencies and, simultaneously, its complement is transmitted on the second of said pair of frequencies. The message is then retransmitted on another pair of orthogonal frequencies. In the second transmission, the message is remapped, such that, adjacent bits in the first transmission are not adjacent in the second transmission and the same bit in the first transmission and the second transmission are not spaced 1/120th of a second apart. Information is collected on the data error rates at each receiver. This information is periodically transmitted to a central frequency controller which collects this error information and determines the error rates on the frequencies being used. A hill-climbing technique is used to choose pairs of frequencies having the lowest current data error rates. The frequency controller transmits the identity of these frequencies to the various transceivers in each message. The transceivers comprise a frequency controlled carrier frequency generator, appropriate data keying for the carrier, a pair of digital state machines, each having a frequency controlled filter connected thereto, appropriate microprocessors for control and broad band coupling networks for coupling the transceiver to a communications channel, which may be an AC power line, a private line, the floor loop of an automatic guided vehicle system, or the like.

11 0.34 04577333 19860318 375/45 Composite shift keying communication system

Inventor: Lewis; Kenneth A.
Assignee: GridComm Inc.
Abstract:

A Composite Shift Keying (CSK) modulation technique is described which provides enhanced error detection capability in a noisy transmission medium, such as an AC power line. A modulating binary signal causes the generation of two of three possible transmitted signals, and when the modulating binary signal is idle, no signal is transmitted. When the modulating signal is active, a single frequency qualifying signal (of radian frequency Wqt) is transmitted. If the active binary signal is a logical 0, an additional single frequency (of radian frequency W0) is transmitted along with Wqt. If the active binary signal is a logical 1, a different single frequency (of radian frequency W1) is transmitted with Wqt.

12 0.33 04866732 19890912 375/1 Wireless telephone system
Inventor: Carey; Michael J.
Assignee: Mitel Telecom Limited
Abstract:

A wireless telephone communication system for wireless, voice, data or voice and data terminals comprising apparatus at a central location for receiving one or a plurality of signals for communication with selected ones of wireless communication terminals, apparatus for converting the signals to spread spectrum radio frequency signals, a leaky transmission line located in a communication region, apparatus for applying the spread spectrum radio frequency signals to the transmission line for electromagnetic radiation within the region, at least one wireless communication terminal adapted to receive a predetermined one of the spread spectrum radio frequency signals and for demodulating it into an intelligible signal.

13 0.33 05005183 19910402 375/1 Wireless telephone system

Inventor: Carey; Michael J.
Assignee: Mitel Telecom Limited
Abstract:

A wireless telephone communication system for wireless, voice, data or voice and data terminals comprising apparatus at a central location for receiving one or a plurality of signals for communication with selected ones of wireless communication terminals, apparatus for converting the signals to spread spectrum radio frequency signals, a leaky transmission line located in a communication region, apparatus for applying the spread spectrum radio frequency signals to the transmission line for electromagnetic radiation within the region, at least one wireless communication terminal adapted to receive a predetermined one of the spread spectrum radio frequency signals and for demodulating it into an intelligible signal.

14 0.33 05267262 19931130 375/1 Transmitter power control system
Inventor: Wheatley, III; Charles E.
Assignee: Qualcomm Incorporated
Abstract:

A power control system for a cellular mobile telephone system in which system users communicate information signals between one another via at least one cell site using code division multiple access spread spectrum communication signals. The power control system controls transmission signal power for each cellular mobile telephone in the cellular mobile telephone system wherein each cellular mobile telephone has an antenna, transmitter and receiver and each cell-site also has an antenna, transmitter and receiver. Cell-site transmitted signal power is measured as received at the mobile unit. Transmitter power is adjusted at the mobile unit in an opposite manner with respect to increases and decreases in received signal power. A power control feedback scheme may also be utilized. At the cell-site communicating with the mobile unit, the mobile unit transmitted power is measured as received at the cell-site. A command signal is generated at the cell-site and transmitted to the mobile unit for further adjusting mobile unit transmitter power corresponding to deviations in the cell site received signal power. The feedback scheme is used to further adjust the mobile unit transmitter power so that mobile unit transmitted signals arrive at the cell-site at a desired power level.

15 0.33 04455651 19840619 370/95.3 Satellite communications system and apparatus
Inventor: Baran; Paul
Assignee: Equatorial Communications Company
Abstract:

A satellite communications system, which is inherently power limited, employing spread spectrum techniques in order to trade-off bandwidth for small ground station antennas. In a one-way system embodiment a central station transmits data to a satellite for relay to a large number of small antenna receiving stations, the transmissions being spread spectrum encoded with spreading code lengths selected to provide adequate data recovery at the least sensitive station to which the transmissions are directed. Spreading codes may also function to address particular stations. In a two-way system embodiment, the central station additionally functions as a terrestrial relay station. A plurality of small antenna transmitting stations, at least one of which may be at the same site as a receiving station, transmit code division multiplexed data via the satellite to the central relay station using sufficiently long and

distinct spreading codes as to permit adequate data error rates and to distinguish the transmissions of the various stations. The central relay station reformats the received data for retransmission to the satellite for relay to the receiving stations.

16 0.33 05103459 19920407 375/1 System and method for generating signal waveforms in a CDMA cellular telephone system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract: ND

A system and method for communicating information signals using spread spectrum communication techniques. PN sequences are constructed that provide orthogonality between the users so that mutual interference will be reduced, allowing higher capacity and better link performance. With orthogonal PN codes, the cross-correlation is zero over a predetermined time interval, resulting in no interference between the orthogonal codes, provided only that the code time frames are time aligned with each other. In an exemplary embodiment, signals are communicated between a cell-site and mobile units using direct sequence spread spectrum communication signals. In the cell-to-mobile link, pilot, sync, paging and voice channels are defined. Information communicated on the cell-to-mobile link channels are, in general, encoded, interleaved, bi-phase shift key (BPSK) modulated with orthogonal covering of each BPSK symbol along with quadrature phase shift key (QPSK) spreading of the covered symbols. In the mobile-to-cell link, access and voice channels are defined. Information communicated on the mobile-to-cell link channels are, in general, encoded, interleaved, orthogonal signalling along with QPSK spreading.

17 0.33 05241562 19930831 375/1 Spread spectrum communications system
Inventor: Partyka; Andrzej
Assignee: Pittway Corporation
Abstract: ND

A spread spectrum communication system for direct sequence transmission of digital information having a modulation format which is particularly suitable for indoor communication within residential, office and industrial structures. The modulation format combines BPSK or MSK spreading with FM carrier modulation by data bits and a carrier frequency shift whose magnitude is related to both a chip rate and a spreading sequence length. The carrier, chip clock and data clock are all synchronous and the sequence length is an integral submultiple of the bit length. The system reduces the frequency error between the transmitter chip clock and the receiver chip clock to permit the elimination of a code phase tracking loop in the receiver to reduce the receiver complexity. The receiver has an extended dynamic range which makes possible the reception of very strong signal without an automatic gain control loop (AGC) as well as reducing the time needed for code phase acquisition. The transmission system is highly resistant to CW jamming and short distance multipath effects.

18 0.33 05309474 19940503 375/1 System and method for generating signal waveforms in a CDMA cellular telephone system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract:

A system and method for communicating information signals using spread spectrum communication techniques. PN sequences are constructed that provide orthogonality between the users so that mutual interference will be reduced, allowing higher capacity and better link performance. With orthogonal PN codes, the cross-correlation is zero over a predetermined time interval, resulting in no interference between the orthogonal codes, provided only that the code time frames are time aligned with each other. In an exemplary embodiment, signals are communicated between a cell-site and mobile units using direct sequence spread spectrum communication signals. In the cell-to-mobile link, pilot, sync, paging and voice channels are defined. Information communicated on the cell-to-mobile link channels are, in general, encoded, interleaved, bi-phase shift key (BPSK) modulated with orthogonal covering of each BPSK symbol along with quadrature phase shift key (QPSK) spreading of the covered symbols. In the mobile-to-cell link, access and voice channels are defined. Information communicated on the mobile-to-cell link channels are, in general, encoded, interleaved, orthogonal signalling along with QPSK spreading.

19 0.33 RE032905 19890411 370/104.1 Satellite communications system and apparatus

Inventor: Baran; Paul
Assignee: Equatorial Communications Company
Abstract:

A satellite communication system, which is inherently power limited, employing spread spectrum techniques in order to trade-off bandwidth for small ground station antennas. In a one-way system embodiment a central station transmits data to a satellite for relay to a large number of small antenna receiving stations, the transmissions being spread spectrum encoded with spreading code lengths selected to provide adequate data recovery at the least sensitive station to which the transmissions are directed. Spreading codes may also function to address particular stations. In a two-way system embodiment, the central station additionally functions as a terrestrial relay station. A plurality of small antenna transmitting stations, at least one of which may be at the same site as a receiving station, transmit code division multiplexed data via the satellite to the central relay station using sufficiently long and distinct spreading codes as to permit adequate data error rates and to distinguish the transmissions of the various stations. The central relay station reformats the received data for retransmission to the satellite for relay to the receiving stations.

20 0.33 04815106 19890321 375/36 Power line communication apparatus

Inventor: Propp; Michael B.
Assignee: Adaptive Networks, Inc.
Abstract:

A power line communication system specially designed for use in local area network (LAN) configurations has receiver and transmitter sections for fast, highly reliable data communication. The receiver includes controlled adaptive second order filters for ensuring data reception in virtually any signal environment having noise and distortion characteristics, especially alternating current (AC) power lines. A wideband phase shift-keyed (PSK) carrier is impressed on the transmission medium, the carrier having power spread approximately uniformly across a

useful frequency bandwidth. A transmitter section is arranged for adaptive feedback control of the transmitted signal power, so as to prevent possible damage to the transmitter when the transmission medium impedance is low. A logic control circuit provides a correlation count of a received signal in comparison with a known reference signal in order to effectively achieve phase synchronization between the receiver and transmitter.

21 0.33 05056109 19911008 375/1 Method and apparatus for controlling transmission power in a CDMA cellular mobile telephone system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm, Inc.
Abstract:

A power control system for a cellular mobile telephone system in which system users communicate information signals between one another via at least one cell site using code division multiple access spread spectrum communication signals. The power control system controls transmission signal power for each cellular mobile telephone in the cellular mobile telephone system wherein each cellular mobile telephone has an antenna, transmitter and receiver and each cell-site also has an antenna, transmitter and receiver. Cell-site transmitted signal power is measured as received at the mobile unit. Transmitter power is adjusted at the mobile unit in an opposite manner with respect to increases and decreases in received signal power. A power control feedback scheme may also be utilized. At the cell-site communicating with the mobile unit, the mobile unit transmitted power is measured as received at the cell-site. A command signal is generated at the cell-site and transmitted to the mobile unit for further adjusting mobile unit transmitter power corresponding to deviations in the cell site received signal power. The feedback scheme is used to further adjust the mobile unit transmitter power so as to arrive at the cell-site at a desired power level.

22 0.33 05257283 19931026 375/1 Spread spectrum transmitter power control method and system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract:

A power control system for a cellular mobile telephone system in which system users communicate information signals between one another via at least one cell site using code division multiple access spread spectrum communication signals. The power control system controls transmission signal power for each cellular mobile telephone in the cellular mobile telephone system wherein each cellular mobile telephone has an antenna, transmitter and receiver and each cell-site also has an antenna, transmitter and receiver. Cell-site transmitted signal power is measured as received at the mobile unit. Transmitter power is adjusted at the mobile unit in an opposite manner with respect to increases and decreases in received signal power. A power control feedback scheme may also be utilized. At the cell-site communicating with the mobile unit, the mobile unit transmitted power is measured as received at the cell-site. A command signal is generated at the cell-site and transmitted to the mobile unit for further adjusting mobile unit transmitter power corresponding to deviations in the cell site received signal power. The feedback scheme is used to further adjust the mobile unit transmitter power so as to arrive at the cell-site at a desired power level.

23 0.33 04941155 19900710 375/84 Method and circuitry for symbol timing and frequency offset estimation in time division multiple access radio systems

Inventor: Chuang; Justin C.
Assignee: Bell Communications Research, Inc.
Abstract:
In order to correctly demodulate a received sequential burst of symbols in a time division multiplexed/time division multiple access (TDM/TDMA) portable radio digital telephony communications system, proper timing of the sampling time in each received symbol of the burst is necessary. In addition, in order to compensate for component drift, an estimate of the frequency offset between transmitting and receiving units is also required. A method and circuitry for estimating symbol timing and frequency offset is disclosed in which the IF radio signal is sampled and digitized at a sampling rate which is sixteen times the symbol rate. The digitized samples are processed to obtain phase values. A one symbol delay is introduced and differential phase values derived, a differential phase value being derived for each of the sixteen sampling times per symbol. The differential values are collapsed into one quadrant in the phase plane and then expanded back to the full plane. For each of the sixteen sampling times, a separate vector sum is formed of the expanded and collapsed differential phase values over substantially the entire burst. Symbol timing is selected to be the particular one-of-the-sixteen sampling times at which the vector sum has the largest magnitude. Frequency offset is directly determined from the angle in the phase plane of that vector having the largest magnitude.

24 0.33 05307372 19940426 375/1 Radio transceiver for transmitting and receiving data packets

Inventor: Sawyer; Jonathan F.
Assignee: CliniCom Incorporated
Abstract:
An apparatus for transmitting and receiving packets of data among a multitude of base and remote units utilizing a frequency hopping technique. The apparatus uses a single clock source for synchronizing the analog signal processing circuit, the modular encoder and the micrprocessor, and uses an inexpensive microprocessor with a serial peripheral interface.

25 0.33 05265119 19931123 375/1 Method and apparatus for controlling transmission power in a CDMA cellular mobile telephone system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract:
A power control system for a cellular mobile telephone system in which system users communicate information signals between one another via at least one cell site using code division multiple access spread spectrum communication signals. The power control system controls transmission signal power for each cellular mobile telephone in the cellular mobile telephone system wherein each cellular mobile telephone has an antenna,

transmitter and receiver and each cell-site also has an antenna, transmitter and receiver. Cell-site transmitted signal power is measured as received at the mobile unit. Transmitter power is adjusted at the mobile unit in an opposite manner with respect to increases and decreases in received signal power. A power control feedback scheme may also be utilized. At the cell-site communicating with the mobile unit, the mobile unit transmitted power is measured as received at the cell-site. A command signal is generated at the cell-site and transmitted to the mobile unit for further adjusting mobile unit transmitter power corresponding to deviations in the cell site received signal power. The feedback scheme is used to further adjust the mobile unit transmitter power so that mobile unit transmitted signals arrive at the cell-site at a desired power level. In a cell diversity situation, the mobile units transmitter power is adjusted to prevent unnecessary increases in mobile unit transmitter power level.

26 0.33 05121407 19920609 375/1 Spread spectrum communications system
Inventor: Partyka; Andrzej
Assignee: Pittway Corporation
Abstract:

A spread spectrum communication system for direct sequence transmission of digital information having a modulation format which is particularly suitable for indoor communication within residential, office and industrial structures. The modulation format combines BPSK or MSK spreading with FM carrier modulation by data bits and a carrier frequency shift whose magnitude is related to both a chip rate and a spreading sequence length. The carrier, chip clock and data clock are all synchronous and the sequence length is an integral submultiple of the bit length. The system reduces the frequency error between the transmitter chip clock and the receiver chip clock to permit the elimination of a code phase tracking loop in the receiver to reduce the receiver complexity. The receiver has an extended dynamic range which makes possible the reception of very strong signal without an automatic gain control loop (AGC) as well as reducing the time needed for code phase acquisition. The transmission system is highly resistant to CW jamming and short distance multipath effects.

27 0.33 05127101 19920630 455/51.1 Simulcast auto alignment system
Inventor: Rose, Jr.; George D.
Assignee: Ericsson GE Mobile Communications Inc.
Abstract:

In a multisite radio frequency simulcasting transmission system involving microwave-multiplex distribution paths to several transmitting sites, each path including manually settable amplitude and time delay devices for equalization of the modulation in signal overlap areas among the various transmitter sites, an automatic simulcast alignment device is included in each distribution path whereby transmissions between a control point and each site transmitter are periodically tested and each path is compensated for amplitude and time delay variations to thus maintain equalized amplitude and time of arrival of the modulation in the transmitter site overlap areas. Thus, the instantaneous distribution of the FM modulation sidebands is maintained to be ideally identical in the signal overlap areas.

28 0.33 05249302 19930928 455/11.1 Mixed-mode transceiver system
Inventor: Metroka; Michael P.

Assignee: Motorola, Inc.
Abstract:

A radiotelephone system comprised of a radiotelephone-pair suitably intercoupled theretogether to permit transfer of data, such as NAM information, therebetween. A first of the radiotelephone-pair comprises a radiotelephone of conventional construction. A second radiotelephone of the radiotelephone-pair comprises a radiotelephone having circuitry to transmit efficiently an information signal upon a cellular, communication system of increased capacity. The data sequence contained in the first radiotelephone is transferred to the second radiotelephone to permit a communication link to be formed between the second radiotelephone and a cellular, communication network.

29 0.32 05321849 19940614 455/671 System for controlling signal level at both ends of a transmission link based on a detected valve

Inventor: Lemson; Paul H.
Assignee: Southwestern Bell Technology Resources, Inc.
Abstract:

The present invention is directed to a dynamic range enhancing system for increasing the dynamic range of a transmission link, and also to a process for increasing the dynamic range of a transmission link. An instruction setting process is also provided for defining a set of instructions, for a control device of the system, which detects, at an initial position along the transmission link, the level of a transmit signal adapted to be transmitted over the transmission link. The control device controls a first signal level changing device and a second signal level changing device in response to the detected level. The first and second signal level changing devices, respectively, process the transmit signal level before and after transmission over the link.

30 0.32 04597082 19860624 371/32 Transceiver for multi-drop local area networks

Inventor: Hill; Lawrence W.
Assignee: Controlonics Corporation
Abstract:

A multi-drop local area network utilizes alternating current power lines as a transmission channel. Identical transceivers are used as a master and as up to 255 slaves. Each transceiver comprises modulator and demodulator units and a microprocessor control unit which may be connected to a host. The modulator and demodulator are connected to the alternating current power line through a high pass filter comprising a split bobbin, iron core transformer having an air gap which also provides impedance matching. The demodulator includes a clipper and analog circuitry providing a band pass filter and generating a square wave corresponding to the received carrier. A state machine acting as a digital filter produces a received carrier signal only when each half cycle of the carrier square wave is of the proper duration and the carrier signal has existed for slightly more than one half of the transmitted bit duration, which is a predetermined number of carrier cycles. The microprocessors are programmed to provide for block ahead acknowledgment, alternate transmissions between master and slaves; each block message comprises an acknowledgment non-acknowledgment bit, a message sequence bit, a polling sequence bit, and a longitudinal redundancy check. The carrier frequency utilized lies in the range of 20 to 40 KHz and preferably within the range between 27

and 33 KHz for a power line transmission channel. Error free 1200 Baud transmission rates are achieved in full duplex. Higher carrier frequencies and transmission rates are possible over less noisy transmission channels such as wire pairs.

31 0.32 04654867 19870331 379/59 Cellular voice and data radiotelephone system

Inventor: Labedz; Gerald P.
Assignee: Motorola, Inc.
Abstract:

A data message transmission system for a cellular radiotelephone system is disclosed. Data to be transmitted is converted into a format compatible with radio transmission prior to transmission. The data is reconverted to its original format following reception. Handoff is accomplished by halting the data transmission prior to handoff and resuming data transmission after handoff. Call supervision occurs via busy-idle bit coding.

32 0.32 05333175 19940726 379/58 Method and apparatus for dynamic power control in TDMA portable radio systems

Inventor: Ariyavisitakul; Sirikiat
Assignee: Bell Communications Research, Inc.
Abstract:

In a TDM/TDMA portable radio communications system the uplink power transmitted by the transmitter of a portable unit to a fixed port is dynamically controlled by monitoring three measures in each uplink burst received by the port. These measures are a received signal strength indicator (RSSI), a quality measure (QM), and a word error indicator (WEI). The WEI is used to adjust an RSSI threshold upward and downward. If the QM is below a predetermined QM threshold or the RSSI is below the current value of the adjustable RSSI threshold, then additional uplink power is required, unless the RSSI is greater than a predetermined maximum RSSI value. If additional power is required a power control bit (PC), included within each downlink burst transmitted to the portable, is set to ONE and the portable, in response thereto, increases its output transmitter power. If both the QM is greater than the predetermined QM threshold and the RSSI is greater than the RSSI threshold, or if the RSSI is greater than the predetermined maximum RSSI value, then PC is set to ZERO and the portable transmitter power is decreased.

33 0.32 05084891 19920128 371/42 Technique for jointly performing bit synchronization and error detection in a TDM/TDMA system

Inventor: Ariyavisitakul; Sirikiat
Assignee: Bell Communications Research, Inc.
Abstract:

A technique for bit synchronization and error detection of received digital data bursts in a TDM/TDMA system, such as that which will be used with low power portable digital telephony. A cyclically redundant codeword, e.g. a (161,147) codeword, is formed for transmission, using e.g. either a TDM packet or TDMA burst. The first and last bits in the codeword are then inverted to form a first set of marker bits. At a receiver, a second set of marker bits is inserted into a received word,

again through inverting the first and last bits. The resulting marked word is then rotated by a pre-determined number of bits to place potentially erroneous bits at the end of this word. A multi-bit timing syndrome value is then determined and is used to access a look-up table for a value of bit slippage. The received word is advanced or retarded as specified by the bit slippage value to yield an intermediate word. The marker bits are removed from the intermediate word to yield an unmarked word for which an error syndrome value is determined. If the error syndrome value is zero, then the unmarked word is a synchronized substantially error-free codeword. If the unmarked word contains excessive bit slippage or bit errors indicated by an excessive value of the timing syndrome or a non-zero valued error syndrome, an indication is provided to ignore this word.

34 0.32 05226045 19930706 370/95.3 Method and apparatus for autonomous selective routing during radio access in TDMA portable radio systems

Inventor: Chuang; Justin C.
Assignee: Bell Communications Research, Inc.
Abstract:

In a TDM/TDMA digital radio communications system, each portable unit in accessing the system must select the "best" port through which to route each call. The so called "best" port may not, however, have an idle time-slot to accommodate the call. Attempts to route a call through a busy "best" port, or busy "second best" port will decrease the throughput of the network and result in increased call setup time. An autonomous selective routing scheme is described which increases system throughput and decreases call setup time. When a user at a portable unit (301) desires to access the network, the portable unit scans (308, 309) the downlink frequencies associated with each of the ports in the system. For each port, the portable measures signal quality (310) and determines from the received bit patterns (313) whether the port has an idle time-slot. The highest signal quality measure for a port having an idle time-slot is determined (315) and the call is routed through that port if that highest signal quality measure exceeds (317) a predetermined quality measure threshold. Otherwise, the call is blocked.

35 0.32 04234952 19801118 370/85.3 Conflict resolution by retransmission delay on shared communication medium

Inventor: Gable; Melvin G.
Assignee: Ford Motor Company
Abstract:

An apparatus for enabling communications between two or more transceivers when a plurality of transceivers share a common communication medium or channel. The geographical locations of the transceivers are such that the propagation delay between any source to destination pair is relatively a small function of the transmission duration or packet time. In order to prevent two or more transceivers from simultaneously transmitting over the common medium, each transceiver requires a control apparatus. The simultaneous transmission by two or more transceivers is not very likely due to different start times. However, if such start times differ by less than the propagation delay between the transceivers then interference will result. Hence the control apparatus includes a means of resolving such contention interferences by providing a retransmission

delay to govern the transmission.

36 0.32 05179569 19930112 375/1 Spread spectrum radio communication system

Inventor: Sawyer; Jonathan
Assignee: Clinicom, Incorporated
Abstract:
A data entry and retrieval system utilizing a plurality of remote units in radio communication with a plurality of base units in electronic communication with a central processing computer. The base units establish links with transmitting remote units by the remote units choosing the base units with the best signal. The linked remote unit and base unit transmit using frequency hopping spread spectrum modulation, using a predetermined frequency hopping sequence and at a point in the sequence unique to the particular base unit. The system may be configured with a plurality of NODES, each of which has a unique predetermined frequency hopping sequence and assigned base units and remote units.

37 0.32 04580276 19860401 375/42 System and method for transporting data

Inventor: Andruzzi, Jr.; Anthony M.
Assignee: Consultant's Choice Inc.
Abstract:
A private local area network (LAN) is created for use with a variety of transmission media for the purpose of exchanging data preassigned addresses, and control signals according to simplified protocols. The LAN members can consist of any combination of computers, electronic devices or terminals adapted for intercommunication via microprocessor-based modems which are capable of performing either master or slave functions within the LAN in accordance with their individual software designations. Each modem operating on the LAN has the capability of filtering analog noise, detecting/blocking digital data errors, operating within a wide range of appropriate line impedances, and both transmitting and receiving digital data at rates in the neighborhood of 85 kbaud in the form of frequency, or tone, bursts according to a hybrid ASK/FSK data encoding an transmission scheme. That encoding/transmission scheme consists of the selection of one frequency, or tone, to be both transmitted and received for a duration equivalent to no more than one-half the bit period of a "1" and of the selection of a second frequency to be both transmitted and received for a duration equivalent to no more than one-half the bit period of a "0".

38 0.32 04789983 19881206 370/94.1 Wireless network for wideband indoor communications

Inventor: Acampora; Anthony
Assignee: American Telephone and Telegraph Company, AT&T Bell Laboratories
Abstract:
The present invention relates to a wideband communication network using wireless radio transmissions either on a stand-alone basis or to supplement a hard-wired network. The exemplary network comprises (a) a plurality of transceivers associated with separate users of the network; (b) optionally at least one concentrator associated with certain separate subgroups of wireless and possibly hard-wired transceivers for providing duplex operation; and (c) a central node (i) capable of providing both duplex communications directly via a radio channel using radio links with certain subgroups of the transceivers and via a hard-wired connection with

each optional concentrator, and (ii) for polling the needs of all transceivers and directing all packets of information from active transceivers through the central node and to the destined transceivers during each frame period. The network also preferably includes diversity and resource sharing techniques to provide added protection against channel impairments on an as-needed basis.

39 0.32 04979170 19901218 370/104.1 Alternating sequential half duplex communication system

Inventor: Gilhousen; Klein S.
Assignee: Qualcomm, Inc.
Abstract:

A message communication system employing one or more centralized communication stations transferring messages through Earth orbit repeater satellites to or from mobile terminals with at least one central communication station having a first transceiver for transmitting a first communication signal to one or more mobile terminals and at least one mobile terminal having a second transceiver for receiving the first communication signal and demodulating it, and for transmitting at a predetermined duty cycle of the second transceiver, a second communication signal to at least one of the central communication stations. The preferred duty cycle over which the second communication signal is transmitted is about fifty percent of the second transceiver duty cycle. The communication system uses Time Division Multiplexed (TDM) communication signals using a number of channels as designated address channels with the remainder being used for data transfer. Information transmitted on the address channels is used by terminals to determine both the presence of a message and its corresponding data transmission or reception channel. In addition the terminals use the reception of the first communication signal to adjust return link transmission frequency to compensate for transmission path errors. The alternating duty cycle allows mobile terminals to use a single set of local oscillators for both transmission and reception modes of operation. To decrease interference with other systems the present system employs a power dispersal modulation function to achieve the footprint of a video signal for high transfer rate digital communication signals.

40 0.32 04975926 19901204 375/1 Wireless indoor data communication system

Inventor: Knapp; Guenther
Abstract:

Described is an intraoffice communication system as the final communication link of a broadband, baseband, or fiber optic LAN. Each user or workstation is a node on the network and can transmit at high data rates with bit error rates of 10-9 in packets through the LAN. Message relaying transponders are placed on the ceiling and walls communicating by electromagnetic waves to individual workstations by broadcast. A novel multipath rejection scheme is combining transponder placements with pseudonoise coding for robust and secure data transmission. For the present state of the art if infrared is used, we estimate a minimum light collecting aperture (receive antenna) of 1 cm2 for transmission rates of 30 to 100 Mb/s.

41 0.32 04763357 19880809 380/48 Method and apparatus for providing secure electronic

communications
Inventor: Barr; William S.
Abstract:
A method and apparatus for providing secure electronic communications over a communications medium between first and second locations is disclosed. A data device for generating and/or receiving data is located at each of the locations. A composite modem is coupled to each data device. Each composite modem comprises a microprocessor controller operating under program control for determining the configuration of the message to be transmitted from one data device to the other. The controller is coupled to a switching circuit which selects, in dependence on a configuration message generated by the controller, the configuration of the message to be transmitted. A plurality of characteristic controllers are coupled to the switching circuit. Each characteristic controller is provided to select at least one variation of one of a plurality of characteristics of the message, including the baud rate, transmission coding scheme, transmission method, parity technique, transmission technique (full or half duplex), carrier frequency and modulation technique. The configuration message is also transmitted to the second location so that the second location can be properly configured to receive the message. At time intervals, preferably random time intervals, the configuration message is changed. The configuration message itself is also preferably generated randomly. The configuration message can be changed as often as necessary to prevent unauthorized access to the information transmitted over the communications channel.

42 0.32 04901307 19900213 370/18 Spread spectrum multiple access
communication system using satellite
or terrestrial repeaters
Inventor: Gilhousen; Klein S.
Assignee: Qualcomm, Inc.
Abstract:
A multiple access, spread spectrum communication system and method for providing high capacity communications to, from, or between a plurality of system users, using code-division-spread-spectrum communication signals. The communication system uses means for providing marginal isolation between user communication signals. The marginal isolation is provided by generating simultaneous multiple steerable beams; using an omni-directional antenna with polarization enhancement; using power control devices to adjust the output power for user generated communication signals either in response to their input activity level, or in accordance with a minimum allowable power for maintaining a communication link. The communication system can also employ a means for transmitting a predetermined pilot chip sequence contiguous with the code-division-spread-spectrum communication signals. In further embodiments the communication system employs a plurality of user terminals linked to each other or to other services through one or more terrestrial or satellite repeaters. Multiple satellite repeaters are operable in a new communication mode to obtain further gains in signal isolation.

43 0.32 05212831 19930518 455/54.1 Method and apparatus for autonomous
adaptive frequency assignment in TDMA
portable radio systems
Inventor: Chuang; Justin C.

Assignee: Bell Communications Research, Inc.
Abstract:

To assign and coordinate radio frequencies at the fixed ports (30, 40, 50, 70) of a frequency-reusing radio communications system (5), most existing methods require pre-engineering or impose high complexity in system controller and port hardware. A simple autonomous procedure performed by each port to determine its own transmitting frequency and corresponding receiving frequency is disclosed. This procedure consists of signal strength measurements and an algorithm which selects the frequency with minimum interference from other ports. In particular, a port turns off (202) its own transmitter (306) and scans (203) all the candidate transmitter frequencies and measures (312) signal powers form the other ports. The frequency channel with the lowest received power is tentatively assigned (204) for downlink transmission by that port. This procedure is repeated by all the ports either independently and asynchronously or with a coordinated schedule. This cycle is repeated for either a predetermined number of iterations that is sufficient to stabilize the frequency-reuse pattern, or until no port requests a change in its assigned frequency for two consecutive cycles thereby indicating the convergence of the algorithm. This algorithm stabilizes rapidly, while adapting to changing operational conditions, such as the installation of new ports, which changes the system configuration, or the addition of new buildings which creates different interference patterns in the signal propagation paths.

44 0.32 03823401 19740709 370/24 SYNCHRONOUS DATA TRANSMISSION NETWORK
Inventor: Berg; Edward A.
Assignee: Data Transmission Company
Abstract:

Disclosed is a common carrier type network for the high speed transmission of digital data. Data channels are multiplexed for transmission over a microwave backbone trunk in a synchronous manner and subscriber interconnection is effected at an intermediate multiplex level by a time division switch matrix. Full duplex transmission is by way of two digitally modulated microwave carriers.

45 0.32 05109390 19920428 375/1 Diversity receiver in a CDMA cellular
telephone system
Inventor: Gilhousen; Klein S.
Assignee: Qualcomm Incorporated
Abstract:

A spread spectrum receiver subsystem for utilization in a CDMA cellular telephone having a searcher receiver for scanning the time domain so as to use the PN processing gain and time discrimination properties of spread spectrum coding to determine the location in the time domain and the received signal strength of multiple receptions of a pilot signal traveling upon one or more physical propagation paths to reception. The searcher receiver provides a control signal indicative of the received pilot signals of greatest strength and corresponding time relationship. A data receiver receives spread spectrum communication signals accompanying each received pilot signal and is responsive to the searcher control signal for acquiring and demodulating a spread spectrum communication signal, concomitant with the pilot signal of greatest signal strength, and thus providing a corresponding information bearing encoded output signal.

46 0.32 05029180 19910702 375/1 Transceiver providing selectable

frequencies and spreading sequences
Inventor: Cowart; Brooks E.
Assignee: Echelon Systems Corporation
Abstract:
A transceiver for transmitting and receiving digital data is disclosed. The transceiver employs direct sequence spread spectrum communications techniques for reducing interference among multiple users in a communications network environment. Each transceiver has a transmitter for locking a digital bit stream to a predetermined spread spectrum chip sequence and carrier signal. Frequency of the carrier signal and the chip sequence. Both the carrier signal, the chip sequence and the bit stream rate are derived from an integrally related to an accurate reference frequency to facilitate rapid acquisition and decoding of the signal by another transceiver. To provide for multiple communications channels on a single transmission medium, means for producing selectable carrier frequencies and/or selectable spreading sequences are included. The transceiver also has a receiver portion for acquiring and decoding a transmitted and direct sequence spread spectrum signal to recover the digital bit stream using the spread spectrum chip sequence and carrier signal.

47 0.32 05189683 19930223 375/1 Transceiver providing selectable frequencies and spreading sequences
Inventor: Cowart; Brooks E.
Assignee: Echelon Corporation
Abstract:
A transceiver the transmitting and receiving digital data is disclosed. The transceiver employs direct sequence spread spectrum communications techniques for reducing interference among multiple users in a communications network environment. Each transceiver has a transmitter for locking a digital bit stream to a predetermined spread spectrum chip sequence and carrier signal. Frequency of the carrier signal and the chip sequence. Both the carrier signal, the chip sequence and the bit stream rate are derived from an integrally related to an accurate reference frequency to facilitate rapid acquisition and decoding of the signal by another transceiver. To provide for multiple communications channels on a single transmission medium, means for producing selectable carrier frequencies and/or selectable spreading sequences are included. The transceiver also has a receiver portion for acquiring and decoding a transmitted and direct sequence spread spectrum signal to recover the digital bit stream using the spread spectrum chip sequence and carrier signal.

48 0.32 05339316 19940816 370/8513 Wireless local area network system
Inventor: Diepstraten; Wilhelmus J. M.
Assignee: NCR Corporation
Abstract:
A local area network system includes a wired backbone LAN (12) and at least one wireless LAN (14) cooperating with the backbone LAN (12) via an access point (22), which has a bridging function. When a source station (30) in the wireless LAN (14) transmits a packet to another station in the wireless LAN (14), the destination station should respond with an ACK signal. If no ACK signal is received by the source station, the packet is retransmitted. The access point (22) also receives the transmitted packet

and if the access point (22) does not detect an ACK signal on the wireless channel', the access point (22) itself generates an ACK signal and retransmits the packet on the wireless LAN (14) or forwards the packet to the wired LAN (12) according to the packet destination address.

49 0.32 03824597 19740716 370/8 DATA TRANSMISSION NETWORK
Inventor: Berg; Edward A.
Assignee: Data Transmission Company
Abstract:

Disclosed is a transcontinental communications network particularly designed for the very rapid transmission of digital data between subscribers throughout major areas of the United States. The network comprises a microwave trunkline extending from San Francisco downwardly through the center of the country and upwardly to Boston along which data may be transmitted at rates of 4800, 9600, and 14,400 bits per second and higher. Transmission along the trunkline is by phase modulation of a carrier in the 6 MHz and 11 MHz band. Time division multiplexing provides a minimum of 4,000 channels utilizing a relatively small bandwidth of the frequency spectrum. The trunklines are under the control of switching centers comprising regional and district offices which allocate channels and handle communications traffic through the network. A microwave cable or optical local distribution system connected to the basic trunkline provides a full duplex operation throughout the network and insures the rapid transmission of data completely throughout the network from one subscriber to another.

50 0.31 05220564 19930615 370/94.1 Transmission control for a wireless
local area network station
Inventor: Tuch; Bruce T.
Assignee: NCR Corporation
Abstract:

In a local area network station (12) for a wireless LAN, a threshold level circuit (62) includes a register (134) which stores a threshold value. The station receiver (42) monitors the transmission channel and provides a receive level signal indicative of the signal level received. Transmission of a data frame by the station transmitter (46) is permitted or deferred according as the receive level signal value is below or above the threshold level, regardless of whether or not the received signal derives from a transmission by a station in the receiving station's own LAN. The threshold is dynamically updated whenever the station (12) receives a data frame from its own LAN. An improved utilization of the wireless transmission channel is achieved.

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